FIRST RECORD OF PARASITES REARED FROM *SPARGANOTHIS SULFUREANA* (LEPIDOPTERA: TORTRICIDAE)[1]

Joseph J. Julian[2]

ABSTRACT: Five dipterous and hymenopterous parasites were reared for the first time from field collected larvae, pupae, or eggs of *Sparganothis sulfureana.*

The larvae of *Sparganothis sulfureana* (Clemens) has been recorded feeding on a wide variety of plants. Martin (1948) and Prentice (1965) report that the insect may be associated with various coniferous and deciduous trees. In addition, celery, corn, strawberry, tall buttercup, great burdock, blue and white vervain, horseweed, alfalfa, blueberry, sweet fern, loosestrife, cranberry and apple are listed as host plants. (Hardenburg 1903, Beckwith 1938, Tomlinson 1947, 1961, Marucci 1953, Chapman and Lienk 1971). The insect is considered economically important on apple. (Chapman and Lienk 1971). The range of *S. sulfureana* includes southern Canada and most of the United States east of the 100th Meridian. (Forbes 1923, Chapman and Lienk 1971).

MATERIALS AND METHODS

During the summers of 1982 and 1983, eggs, larvae and pupae of *S. sulfureana* were hand-picked or collected with an aspirator from leafy spurge plants (*Euphorbia esula* L.) at Lisbon, North Dakota, taken to the laboratory and transferred to rearing cages. Leafy spurge was used as the host plant for the caged insects. One 150 cm x 60 cm x 60 cm cage of acrylic, clear plexiglas, type GM, was divided into three individual compartments. Each compartment was 50 cm x 60 cm x 60 cm and completely enclosed. A 20 cm square hole was cut into each individual compartment for access and a 22.5 cm ventilation fan was placed at the end of the cage for air flow. Nylon screening was used to allow the air to flow through each of the three compartments.

Temperature in the laboratory was maintained at 21°C, the relative humidity was approximately 30%, and the length of photo-period was eight hours. Plastic specimen containers 5 cm wide and 3.5 cm high were also used to study the life stages of *S. sulfureana.* Thirty-five egg masses

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[2]Entomologist, Colorado State University, Cooperative Extension, Douglas County Extension Office, 355 South Wilcox, Suite 111, Castle Rock, Colorado 80104.

collected from leaves of leafy spurge plants in the field were placed in rearing containers. In addition, 116 larvae were transferred into rearing containers. Pre-pupae were isolated and one each was placed in 25 specimen containers to check for emerging parasites.

Parasitic insects that emerged from laboratory samples were sent to the United States Department of Agriculture, Beneficial Insect Laboratory in Beltsville, Maryland, or to specialists at other institutions, for confirmation of identifications. *Sparganothis sulfureana* larvae were reared to adults and sent to J.A. Powell, Department of Entomology, University of California (Berkeley) for identification.

RESULTS

Eight parasites of the orders Diptera and Hymenoptera, were reared from field collected *S. sulfureana* larvae, pupae or eggs. These, as well as parasitic species reported in the literature, are discussed below, and listed in Table 1.

Diptera

Two tachinid species, *Erynnia tortricis* (Coquillett) and *Lixophaga sp.* were recorded as larval parasites of *S. sulfureana. Erynnia tortricis* has been recorded as an internal parasite of several lepidopterous larvae, including members of the genus *Sparganothis.* (Arnaud 1978; Stone *et al.* 1965; Cole 1969). Species of *Lixophaga* are mainly parasites of Lepidoptera but have also been reared from coleopteran and hymenopteran hosts (Arnaud 1978).

Hymenoptera

Elachertus coxalis (Howard), a eulophid wasp, has previously been recorded as a parasite of various pyralid and tortricid moths, but never from *S. sulfureana* (Krombein *et al.* 1979). Three ichneumonid wasps, *Itoplectis conquisitor* (Say), *Glypta* sp., and *Chorinaeus funebris carinatus* (Cresson), were reared from *S. sulfureana.* The species *I. conquisitor* is a general parasite of lepidopteran pupae and is found throughout the U.S. (Fattig 1950; Heinrich 1977; Townes 1959; Krombein *et al.* 1979). This is the first record of *I. conquisitor* attacking *S. sulfureana.* Members of the genus *Glypta* are parasites of lepidopteran larvae such as *S. sulfureana,* which feed in places of concealment. The species of *C.f. carinatus* is known to parasitize many lepidopteran larvae mainly in the eastern and north central U.S. (Fattig 1950; Heinrich 1977; Townes 1959; Krombein *et al.* 1979) and *S. sulfureana* represents an additional host. The braconid wasp genus

Cotesia also is reported for the first time from *S. sulfureana. Cotesia* spp. are internal parasites of lepidopteran larvae (Krombein *et al.* 1979; Muesbeck *et al.* 1951).

Table 1. Parasites of *Sparganothis sulfureana.*

	Host stage attacked	Number of parasites reared
DIPTERA - (records of species not observed in this study taken from Stone, 1965).		
Tachinidae		
Erynnia tortricis (Coquillett)*	Larval	8
Lixophaga sp.**	Larval	2
Nemorilla pyste (Walker)		
HYMENOPTERA - (records of species not observed in this study taken from Krombein, 1979).		
Braconidae		
Agathis calcarata (Cresson)		
Bracon gelechiae Ashmead		
Bracon mellitor Say		
*Cotesia sp.***	Larval	1
Macrocentrus ancylivorus Rohwer		
Meterous trachynotus Viereck		
Microgaster epagoges Gahan		
Oncophanes americanus (Weed)		
Ichneumonidae		
Chorinaeus funebris carinatus (Cresson)**	Larval	2
*Glypta sp.**	Larval	1
Itoplectis conquisitor (Say)**	Pupal	3
Scambus (*Scambus*) *tecumseh* Viereck		
Temelucha epagoges (Cushman)		
Temelucha forbesi (Weed)		
Trichogrammatidae		
*Trichograma sp.**	Egg	2 egg masses
Eulophidae		
Elachertus coxalis (Howard)**	Larval	1
Chalcididae		
Spilochalcis flavopieta (Cresson)		
Bethylidae		
Goniozus platynotae Ashmead		

*Parasites reared from *Sparganothis sulfureana* found on leafy spurge
**First record of parasites reared from *Sparganothis sulfureana*

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